Spin meeting minutes, 7/26/2006

The discussion continued on the solution to put the horizontal tune into the spin tune gap. Nick presented his progress on using polarized proton quads to move the tunes. Since the polarized proton quads located at section 3 where vertical betamax locates. So the quads are at right location to move vertical tune, not horizontal tune. Moving horizontal tune with compensation quads is possible but generates large betawave at high energies. Adding only polarized proton quads can probably push down vertical tune to 8, which makes the intrinsic resonance location away from multiples of 9 and smaller spin tune gap. It is clear that one has to use quads located at sections 17 or 5 to move horizontal tune effectively. There are several solutions on the table to be tested with MAD:

1. Run both tunes near 9 (namely, $\nu_x \sim 8.95, \nu_y \sim 8.98$) with both polarized proton quads (vertical) and skew quads unskewed (leave one unskewed as skew quads) at their current locations.

2. Run only polarized proton quads in series with nearby tune quads with the same vertical tune quads power supply. This arrangement does not produce horizontal tune near integer but will remove the horizontal tune crossing 2/3 resonance twice during the ramp, which potentially causes beam loss and emittance growth.

3. Move one subset(six) of polarized proton quads to either section 17 or 3. But this solution may require much stronger P/S.

Ioannis reported the power supply status for these tune quads. There is one P/S of 500A can be hooked up to the polarized tune quads. To run them separately, 4000 feet cable is needed and the cost of cable and lugs is about 57k dollars and the price is valid till August 1st. He also reported that Power supply group is working on improving horizontal quad power supply quality.

Alfredo reported the ray tracing results for the cold snake with different orbit bump amplitudes. The results agree with what Nick and Nikolay have observed. Nikolay is happy about the agreement and will move forward with his modeling using the snake matrices provided by Alfredo. Leif and Waldo also commented that if we had built a horizontal dipole corrector inside the cold snake, we would have much better horizontal orbit.

I did not get chance to present my presentation about options on the tune quads. I put it in the webpage. Th main points have been presented by Ioannis and Nick.

Haixin